NASA's
Near Earth Network (NEN)
AS3 Antenna Deployment Project

How will AS3 travel to Fairbanks, Alaska?

The AS3 Antenna departed for its long awaited journey north on July 25th. The antenna left from the L-3 Datron Advanced Technologies facility in Simi Valley, California and will be on the road for approximately one week until its arrival at its final destination—the Alaska Satellite Facility (ASF) at the University of Alaska Fairbanks (UAF) in Fairbanks, Alaska.

This newest asset of the Near Earth Network (NEN) passed factory acceptance testing this month and efforts have been centered around gearing up for the transport of the 11-meter dish. The factory acceptance testing ensured that AS3 and its subsystems will meet all requirements captured in the Space Communications and Navigation (SCaN) and NEN System Requirements Documents (SRDs).

The arrival of this new antenna has been anticipated for quite some time, and the excitement surrounding its departure is palpable. NASA first informed ASF of their intention to purchase and install a new antenna system in 2010. This upgrade will give ASF two antenna systems capable of supporting most Earth-observing missions that NASA has in build or planning stages. It has been a long road getting the site approved and designing the system—but at long last AS3 has come to the final steps of actualization-approximately 3,000 miles worth of steps, that is.

But before AS3 could finally hit the road, the antenna first needed to be disassembled and packed for its long, bumpy journey. The disassembly involved the deconstruction of the antenna from top to bottom with the help of cranes and skilled, careful hands. Meticulous care was taken in packing the antenna due to its sensitive parts. The integrity of the surface is of the utmost importance, and its shape must not be compromised. Any dents or even microfractures not visible to the naked eye could result in a failed acceptance testing in Fairbanks.

One unique challenge that the AS3 transport faced was scheduling around Alaskan weather considerations. The antenna will be arriving in Alaska shortly after road restrictions have been lifted following the Spring thaw. The restrictions were only lifted in June, and thus the demand for crane rental is at an all time high for the year. AS3 will require the use of two cranes—one large and one small—and availability has been scarce. In addition to the lack of accessible cranes, a fluctuating schedule from contractors made nailing down a reservation very tricky. This all resulted in a solution that has the shipment taking place in two parts. The main reflector, subreflector, and the supporting electronics will arrive in Fairbanks first and utilize a small crane. The reflector will be reassembled onsite on concrete fixtures while awaiting the arrival of the pedestal and riser, which will use a large crane that has a very small window of availability for assembly.

View of the antenna's pedestal, roughly 20 feet long, sitting on a trailer in Simi Valley, CA.

Drivers will have their fingers crossed for smooth sailing and no "car trouble" along the way. There are many small communities en route that are not equipped to handle emergencies. Folks from ASF reported that once a staffer needed an oil change in a small town, and there were no mechanics in town, so they sold him some oil and a filter and let him use a mechanic bay to change his own oil.

AS3 will traverse a remarkable stretch of terrain on its journey skirting up the coast from Simi Valley to Fairbanks. One interesting leg of the trip will be traveling along a stretch of road that follows the Denali fault and was part of the 7.9 magnitude earthquake of 2002. Researchers estimated the horizontal offset of the road to be about 6.6 m (22 ft). What else could AS3 see? Beautiful rock formations, high plateaus, narrow canyons, rich soil, and breathtaking horizons to be sure. Wildlife sightings could include wolves, lynx, and bears (oh my!). Driving through the Rockies, it is not unusual to see bighorn sheep right on the road. A production supervisor from ASF cautioned that drivers should heed signs that say "Buffalo on the Roadway," because around any corner a single buffalo or a whole herd may be walking on or lying down on the road. Along the way, AS3 could even be held up in an Alaska style traffic jam by a herd of caribou. Barring any major migrations, the antenna is scheduled to arrive in Fairbanks in time for building to start on August 8th.

Stay tuned for more information about the AS3 deployment project by visiting:
The NEN website: http://esc.gsfc.nasa.gov/space-communications/NEN.html
The ESC facebook page: https://www.facebook.com/NASA.ESC